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Patent and Trademark Office  
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|                             |                         |                                   |                                  |
|-----------------------------|-------------------------|-----------------------------------|----------------------------------|
| SERIAL NUMBER<br>08/212,731 | FILING DATE<br>03/14/94 | FIRST NAMED APPLICANT<br>ZUMBERGE | ATTORNEY DOCKET NO.<br>1022.003A |
|-----------------------------|-------------------------|-----------------------------------|----------------------------------|

E6M1/0314

NGERI, M  
EXAMINER

JOHN L. ROGITZ  
FUESS, DAVIDENAS & MEADOWS  
501 WEST BROADWAY, SUITE 1600  
SAN DIEGO, CA 92101-3536

|                  |                   |
|------------------|-------------------|
| ART UNIT<br>2616 | PAPER NUMBER<br>5 |
|------------------|-------------------|

03/14/95

DATE MAILED:

### NOTICE OF ALLOWABILITY

#### PART I.

1. ☒ This communication is responsive to boxed amendment filed on
2. ☐ All the claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice Of Allowance And Issue Fee Due or other appropriate communication will be sent in due course.
3. ☒ The allowed claims are 1-2, 4-23
4. ☐ The drawings filed on \_\_\_\_\_ are acceptable.
5. ☐ Acknowledgment is made of the claim for priority under 35 U.S.C. 119. The certified copy has [ ] been received. [ ] not been received. [ ] been filed in parent application Serial No. \_\_\_\_\_, filed on \_\_\_\_\_
6. ☐ Note the attached Examiner's Amendment.
7. ☐ Note the attached Examiner Interview Summary Record, PTOL-413.
8. ☒ Note the attached Examiner's Statement of Reasons for Allowance.
9. ☐ Note the attached NOTICE OF REFERENCES CITED, PTO-892.
10. ☐ Note the attached INFORMATION DISCLOSURE CITATION, PTO-1449.

#### PART II.

A SHORTENED STATUTORY PERIOD FOR RESPONSE to comply with the requirements noted below is set to EXPIRE THREE MONTHS FROM THE "DATE MAILED" indicated on this form. Failure to timely comply will result in the ABANDONMENT of this application. Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

1. ☐ Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL APPLICATION, PTO-152, which discloses that the oath or declaration is deficient. A SUBSTITUTE OATH OR DECLARATION IS REQUIRED.
2. ☒ APPLICANT MUST MAKE THE DRAWING CHANGES INDICATED BELOW IN THE MANNER SET FORTH ON THE REVERSE SIDE OF THIS PAPER.
  - a. ☒ Drawing informalities are indicated on the NOTICE RE PATENT DRAWINGS, PTO-948, attached hereto or to Paper No. 3. CORRECTION IS REQUIRED.
  - b. ☐ The proposed drawing correction filed on \_\_\_\_\_ has been approved by the examiner. CORRECTION IS REQUIRED.
  - c. ☐ Approved drawing corrections are described by the examiner in the attached EXAMINER'S AMENDMENT. CORRECTION IS REQUIRED.
  - d. ☒ Formal drawings are now REQUIRED.

Any response to this letter should include in the upper right hand corner, the following information from the NOTICE OF ALLOWANCE AND ISSUE FEE DUE: ISSUE BATCH NUMBER, DATE OF THE NOTICE OF ALLOWANCE, AND SERIAL NUMBER.

#### Attachments:

- |   |   |
|---|---|
| - Examiner's Amendment                        | - Notice of Informal Application, PTO-152 |
| - Examiner Interview Summary Record, PTOL-413 | - Notice re Patent Drawings, PTO-948      |
| - Reasons for Allowance                       | - Listing of Bonded Draftsmen             |
| - Notice of References Cited, PTO-892         | - Other                                   |
| - Information Disclosure Citation, PTO-1449   |   |



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E6N1/0321

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**NOTICE OF ALLOWANCE  
AND ISSUE FEE DUE**

☐ Note attached communication from the Examiner

☐ This notice is issued in view of applicant's communication filed \_\_\_\_\_

| SERIES CODE/SERIAL NO.                | FILING DATE | TOTAL CLAIMS | EXAMINER AND GROUP ART UNIT | DATE MAILED   |
|---------------------------------------|-------------|--------------|-----------------------------|---------------|
| 08/212,731                            | 03/14/94    | 1022         | NGORT. M                    | 2616 03/21/95 |
| First Named Applicant ZUMBERGE MARK A |             |              |                             |               |

TITLE OF INVENTION OPTICAL FIBER GRAVITY METER / 812, 731

| ATTY'S DOCKET NO. | CLASS-SUBCLASS | BATCH NO. | APPLN. TYPE | SMALL ENTITY | FEE DUE  | DATE DUE |
|-------------------|----------------|-----------|-------------|--------------|----------|----------|
| 3 1022.003A       | 073-382.010R   | J92       | UTILITY     | YES          | \$605.00 | 06/21/95 |

**THE APPLICATION IDENTIFIES ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT.  
PROSECUTION ON THE MERITS IS CLOSED.**

**THE ISSUE FEE MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS  
APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED.**

**HOW TO RESPOND TO THIS NOTICE:**

I. Review the SMALL ENTITY Status shown above.  
If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is changed, pay twice the amount of the FEE DUE shown above and notify the patent and Trademark Office of the change in status, or
- B. If the Status is the same, pay the FEE DUE shown above.

If the SMALL ENTITY is shown as NO:

- A. Pay FEE DUE shown above, or
- B. File verified statement of Small Entity Status before, or with, pay of 1/2 the FEE DUE shown above.

II. Part B of this notice should be completed and returned to the Patent and Trademark Office (PTO) with your ISSUE FEE. Even if the ISSUE FEE has already been paid by charge to deposit account, Part B should be completed and returned. If you are charging the ISSUE FEE to your deposit account, Part C of this notice should also be completed and returned.

III. All communications regarding this application must give series code (or filing date), serial number and batch number. Please direct all communication prior to issuance to Box ISSUE FEE unless advised to contrary.

**IMPORTANT REMINDER: Patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.**

**Part III DETAILED ACTION**

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. § 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

2. Claims 1, 9-10 are rejected under 35 U.S.C. § 103 as being unpatentable over Davis, Jr. et al. in view of Browning.

Davis, Jr. et al., disclose a fiber optic accelerometer comprising a laser source (element 44), an optical fiber in light communication with the laser, a reflector (element 22), a mass for holding the reflector (element 22), a second reflector in light communication with another optical fiber (element 30), a detector in light communication with second fiber optic (element 47) and a processor (element 48). Although Davis, Jr. et al., utilize a pair of the optical fiber, they reveal the conceptual idea with all the components of the claimed invention, thus, it would have been obvious to one of ordinary skill in the art at the time of

Serial Number: 08/212,731

-3-

Art Unit: 2616

invention to have modified Davis, Jr. et al's device and use only one optical fiber in a proper light communication with other components rather than a pair of optical fibers, because such a modification provides for a simpler and a cost effective device. Davis, Jr. et al., do not use a droppable reflector, however, utilization of free falling object for determining data leading to gravity acceleration is well known in the art, for example Browning discloses a gravity measurement device utilizing the free falling concept (see for example col. 8). Thus, it would have been obvious to one of ordinary skill in the art at the time of invention to have modified Davis, Jr. et al's device by making one of the reflector a droppable reflector in order to measure the time of flight as a component of gravity measurement.

Regarding claim 10, Davis, Jr. et al's photo detector is a photon detector and the signal processor can be a computer.

3. Claim 2 is rejected under 35 U.S.C. § 103 as being unpatentable over Davis, Jr. et al., in view of Browning and further in view of Lautzernhiser.

Davis, Jr. et al., in view of Browning disclose an accelerometer as claimed invention except for the evacuated chamber. Lautzernhiser discloses a gravity meter teaching a vacuum housing (element 48), it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated an evacuated chamber for the reflector and other elements as taught by Lautzernhiser, because an evacuated chamber reduces the gas damping of the system and enhances the accuracy of the reflector.

***Claim Rejections - 35 USC § 102***

a. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 24 is rejected under 35 U.S.C. § 102(b) as being anticipated by Clauser.

Clauser discloses a rotational accelerometer and gravity sensor providing fringe patterns and suggesting method of measuring the gravity utilizing sinusoidal variation in detected flux.

5. Claims 3-8 and 12-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. Claims 15-23 are allowable over the prior art of record.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Twerdochlib discloses a wide band fiber optic accelerometer utilizing a laser source.

Carome discloses a optical fiber accelerometer utilizing a laser.

Serial Number: 08/212,731

-5-

Art Unit: 2616

8. The subject matter of claims 15-23 are deemed to be patentable because the prior art fails to disclose and/or make obvious the claimed movable and fixed reflectors and the specific establishment of the optical guide, and signal corresponding to the fringe patterns.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Max H. Noori whose telephone number is (703) 308-5248. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rich Chilcot, can be reached on (703) 305-4716. The fax number for this group is (703) 305-9508.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4900.

*Md*

MHN

December 28, 1994

*[Signature]*  
RICHARD E. CHILCOT, JR.  
SUPERVISORY PATENT EXAMINER  
GROUP 2600

Art Unit: 2616

*Reasons for Allowance*


1. The following is an Examiner's Statement of Reasons for Allowance: The primary reason for allowance of the claims is that prior art neither teach or suggest the particular combination of specific structure of the device regarding independent claims 1, 9 and 15. Major emphasis being placed upon the inclusion of the specific "elevator means" in claims 1 and 9, and the provision of "movable" and "fixed" reflectors in claim 15, in combination with the remaining limitations of said claims.

Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably **accompany** the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Max H. Noori whose telephone number is (703) 308-5248. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rich Chilcot, can be reached on (703) 305-4716. The fax number for this group is (703) 305-9508.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4900.

  
MHN  
March 9, 1995

  
RICHARD E. CHILCOT, JR.  
SUPERVISORY PATENT EXAMINER  
GROUP 2600